

1 – 14 (Previously Cancelled)

15. (Currently Amended) A nuclear fuel rod for a boiling water nuclear reactor, comprising:

a cladding tube, defining a closed inner space and which is manufactured from at least one of the materials in the group zirconium and a zirconium-based alloy;

a plurality of nuclear fuel pellets, arranged in the inner space in the cladding tube so that the nuclear fuel pellets fill part of the inner space;

an initial fill gas arranged in the closed inner space in order to fill the rest of the inner space;

whereby the initial fill gas contains a proportion of inert gas and a proportion of carbon monoxide; and wherein

the internal pressure (P_{fill}) of the initial gas in the nuclear fuel rod amounts to at least about 2 bar (abs) at room temperature (T_R) and the proportion of carbon monoxide is at least 4 volume percent of the initial fill gas; and

wherein the cladding tube has an inner surface that faces the inner space and the material in the cladding tube nearest the inner surface is pre-oxidized to provide a surface layer that comprises zirconium oxide; and

wherein the material of the cladding tube comprises sites capable of adsorbing hydrogen, the carbon monoxide of the initial fill gas being provided to block the sites.

16. (Cancelled)

17. (Previously Presented) A nuclear fuel rod according to claim 16, wherein the proportion of carbon monoxide constitutes at least 5 volume percent of the initial fill gas.

18. (Previously Presented) A nuclear fuel rod according to claim 17, wherein the proportion of carbon monoxide constitutes at least 6 volume percent of the initial fill gas.

19-23 (Cancelled)

24. (Previously Presented) A nuclear fuel rod according to claim 15, wherein the inert gas consists substantially of helium.

25. (Currently Amended) A nuclear fuel assembly for a boiling water nuclear reactor, said nuclear fuel assembly comprising a plurality of nuclear fuel rods, each fuel rod including:

a cladding tube, defining a closed inner space and which is manufactured from at least one of the materials in the group zirconium and a zirconium-based alloy;

a plurality of nuclear fuel pellets, arranged in the inner space in the cladding tube so that the nuclear fuel pellets fill part of the inner space;

an initial fill gas arranged in the closed inner space in order to fill the rest of the inner space;

whereby the initial fill gas contains a proportion of inert gas and a proportion of carbon monoxide; and wherein

the internal pressure (P_{fill}) of the fill gas in the nuclear fuel rod amounts to at least about 2 bar (abs) at room temperature (T_R) and the proportion of carbon monoxide is at least 4 volume percent of the initial gas; and

wherein the cladding tube has an inner surface that faces the inner space and the material in the cladding tube nearest the inner surface is pre-oxidized to provide a surface layer that comprised zirconium oxide; and

wherein the material of the cladding tube comprises sites capable of adsorbing hydrogen, the carbon monoxide of the initial fill gas being provided to block the sites.

26 – 29 (Cancelled)